

Notice of Allowability

Applicati n No.

09/891,589

Examiner

Leonard S Liang

Applicant(s)

TAKAHASHI ET AL.

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to claim amendments filed on 01/30/04.
2. ☒ The allowed claim(s) is/are 1-26.
3. ☒ The drawings filed on 13 September 2002 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


Stephen D. Meier
Primary Examiner

ISI LSL

DETAILED ACTION

Allowable Subject Matter

Claims 1-26 are allowed.

The following is an examiner's statement of reasons for allowance:

The primary reason for the allowance of claim 1 is the inclusion of the limitations of "obtaining means for obtaining information indicative of an amount of ink to be ejected to each of a plurality of unit areas provided by dividing an area in the neighborhood of a boundary between adjacent bands of scanning recording of the recording head on the recording material; and control means for reducing the total amount of ink to be ejected to the unit areas on the basis of the information obtained by the obtaining means, wherein the unit areas exist astride the boundary between adjacent ones of the bands". It is these limitations found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 2-3 and 19 is the inclusion of the method steps being "an obtaining step of obtaining information indicative of an amount of ink to be ejected to each of a plurality of unit areas provided by dividing an area in the neighborhood of a boundary between adjacent bands of scanning recording of the recording head on the recording material; and a control step of reducing the total amount of ink to be ejected to the unit areas on the basis of the information obtained in the obtaining step, wherein the unit areas exist astride the boundary between adjacent ones of the bands". It is these steps found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

Art Unit: 2853

The primary reason for the allowance of claims 4-7 is the inclusion of the limitations of "dot count means for counting an ink ejection data number for each of a plurality of unit areas provided by dividing an area in the neighborhood of a boundary between adjacent bands of scanning recording of the recording head on the recording material; determining means for determining a thinning rate for each of the unit areas on the basis of the ink ejection data number counted by the dot count means; and thinning means for effecting a thinning process to the ink ejection data on the basis of the thinning rate determined by the determining means, wherein the unit areas astride the boundary between adjacent ones of the bands". It is these limitations found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 8 is the inclusion of the limitations of "obtaining means for obtaining information indicative of an amount of ink to be ejected to each of a plurality of unit areas provided by dividing an area in the neighborhood of a boundary between adjacent bands of scanning recording of the recording head on the recording material; and control means for reducing an amount of ink ejected to an area to be thinned in the unit areas on the basis of the information obtained by the obtaining means; whereas the sizes of the unit area and the area to be thinned are different from each other". It is these limitations found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 9-10 is the inclusion of the method steps being "an obtaining step of obtaining information indicative of an amount of ink to be ejected to each of a plurality of unit areas provided by dividing an area in the neighborhood of a boundary

Art Unit: 2853

between adjacent bands of scanning recording of the recording head on the recording material; and a control step of reducing an amount of the ink ejected to an area to be thinned in the unit areas on the basis of the information obtained in the obtaining step, wherein the sizes of the unit area and the area to be thinned are different from each other". It is these steps found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 11-16 is the inclusion of the limitations of "dot count means for counting an ink ejection data number for each of a plurality of unit areas provided by dividing an area in the neighborhood of a boundary between adjacent bands of scanning recording of the recording head on the recording material; determining means for determining a thinning rate for each of the unit areas on the basis of the ink ejection data number counted by the dot count means; and thinning means for effecting a thinning process to the ink ejection data for an area to be thinned in the unit area on the basis of the thinning rate determined by the determining means, wherein the sizes of the unit area and the area to be thinned are different from each other". It is these limitations found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 17-18 and 20 is the inclusion of the limitations of "recording control means for imparting relative movement between the recording head and the recording material and ejecting ink from the recording head in accordance with ink ejection image data to sequentially effecting recording operations for adjacent recording areas by the ink ejected from the recording head; and control means for counting a number of data

Art Unit: 2853

indicative of ejection of the ink for boundary areas of adjacent recording areas and reducing the ejection data for the boundary areas on the basis of the number of the counted data, wherein a rate of reducing the ejection data is changed according to the number of the counted data". It is these limitations found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 21-23 is the inclusion of the method steps being "counting a number of data indicative of ejection of the ink for boundary areas of adjacent recording areas; and reducing the ejection data for the boundary areas on the basis of the number of the counted data, wherein a rate of reducing in the reducing step is changed according to the number of the counted data". It is these steps found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 24 is the inclusion of the method steps being "a dot count step of counting an ink ejection data number for each of a plurality of unit areas provided by dividing an area in the neighborhood of a boundary between adjacent bands of scanning recording of the recording head on the recording material; a determining step of determining a thinning rate for each of the unit areas on the basis of the ink ejection data number counted in the dot count step, and a thinning step of effecting a thinning process to the ink ejection data on the basis of the thinning rate determined in the determining step, wherein the unit areas exist astride the boundary between adjacent ones of the bands". It is these steps found

Art Unit: 2853

in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 25-26 is the inclusion of the method steps being "a dot count step of counting an ink ejection data number for each of a plurality of unit areas provided by dividing an area in the neighborhood of a boundary between adjacent bands of scanning recording of the recording head on the recording material; a determining step of determining a thinning rate for each of the unit areas on the basis of the ink ejection data number counted in the dot count step, and a thinning step of effecting a thinning process to the ink ejection data for an area to be thinned in the unit area on the basis of the thinning rate determined in the determining step, wherein the unit areas exist astride the boundary between adjacent ones of the bands". It is these steps found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2853

Ishikawa et al (US Pat 6511143) discloses a complementary recording system using multi-scan.

Kato et al (US Pat 6135656) discloses an ink-jet printing method and apparatus for performing printing by employing ink and processing liquid making ink insoluble.

Fujita et al (US Pat 6003970) discloses an ink-jet recording apparatus and method.

Noda (US Pat 6264299) discloses a method of erasing dots in inkjet printers.

Takahashi (US Pat 6612675) discloses an image-forming system and apparatus constituting the same.

Teshigawara et al (US Pat 6652066) discloses an ink jet printing apparatus and ink jet printing method.

Chikuma et al (US Pat 6729710) discloses an ink jet recording apparatus and method with reduced banding.

Chikuma et al (US Pat 6629743) discloses an ink jet recording method, recording apparatus and data processing method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (703) 305-4754.

The examiner can normally be reached on 8:30-5 Monday-Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (703) 308-4896. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2853

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Stephen D. Meier
Primary Examiner